
Living Synthetic Vascular Grafts with Renewable Endothelium

Grant Award Details

Living Synthetic Vascular Grafts with Renewable Endothelium

Grant Type: Medical Device Translational Research Projects

Grant Number: TRAN3-13332

Investigator:

Name: Aijun Wang

Institution: University of California, Davis

Type: PI

Award Value: \$3,112,567

Status: Pre-Active

Grant Application Details

Application Title: Living Synthetic Vascular Grafts with Renewable Endothelium

Public Abstract:**Translational Candidate**

LXW7 coated ePTFE vascular graft achieves rapid endothelialization and improved graft patency by capturing endogenous endothelial progenitor cells

Area of Impact

This technology will produce long-lasting vascular grafts with self-renewable "living" endothelium and improve dialysis patients' quality of life

Mechanism of Action

The arteriovenous ePTFE dialysis graft approach is the most common form of vascular access for hemodialysis in the U.S., but has high failure rates. One of the major causes is the lack of a functional endothelium which is crucial to the prevention of thrombosis and stenosis. The LXW7 coated ePTFE graft will promote in situ endothelialization as the LXW7 works to increase the capture and binding of endogenous endothelial progenitor cells (EPCs) and endothelial cells (ECs)

Unmet Medical Need

Globally, in 2018 it was estimated that there were over 2 million people who suffered from kidney failure. Patients undergoing hemodialysis often require multiple interventions due to graft failure. There is an unmet clinical need for long-term vascular access for hemodialysis patients.

Project Objective

Pre-IDE meeting with the FDA

Major Proposed Activities

- Manufacture, characterize, and optimize a viable prototype in making LXW7-ePTFE grafts and evaluate their properties in vitro
- Evaluate the mechanism of action, function, and efficacy of LXW7-ePTFE grafts in small animal models
- Investigate the short-term and long-term behavior and function of LXW7-ePTFE grafts in clinically relevant large animal models

Statement of Benefit to California:

Californians are at risk for kidney disease. 106,888 Californians are living with end-stage renal disease (ESRD, or kidney failure). Without treatment, dialysis or a transplant, ESRD is fatal. Only 1 in 7 California patients on the waiting list got a kidney transplant in 2020. Patients undergoing hemodialysis often require multiple interventions due to graft failure. Providing a durable vascular graft with long-term patency will allow reliable access to life-saving hemodialysis for patients.

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